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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
HAILE, FEBEN	
ART UNIT	PAPER NUMBER
2663	

DATE MAILED: 12/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/833,541	CREMIN ET AL.	
	Examiner	Art Unit	
	Feben M Haile	2663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 April 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *26 and 27* is/are allowed.

6)☒ Claim(s) *1, 3-8, & 14-20* is/are rejected.

7)☒ Claim(s) *2, 9-13, & 21-25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 April 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *04/11/2001*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
(e) BACKGROUND OF THE INVENTION.

(1) Field of the Invention.
(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(f) BRIEF SUMMARY OF THE INVENTION.
(g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(h) DETAILED DESCRIPTION OF THE INVENTION.
(i) CLAIM OR CLAIMS (commencing on a separate sheet).
(j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

2. The disclosure is objected to because of the following informalities: The specification does not include a brief summary of the invention. Appropriate correction is required.

3. The disclosure is objected to because of the following informalities: Each of the section headings are bold, underlined, and not completely in upper case letters. Appropriate correction is required.

4. The disclosure is objected to because of the following informalities: On page 10, the reference character "305" is used to denote the "clock generator" in figure 3 but the "clock generator" in figure 3 is denoted by the reference character "306". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 3, 6-8, 14-15 & 18-20 rejected under 35 U.S.C. 102(e) as being anticipated by Fujisawa et al. (US 6657967).

Regarding claim 1, Fujisawa discloses the limitations: converting a first flow of data words into a second flow of data words (2.4G optical signal converted into STM16 signal; figure 1 and see column 2 lines 33-35), said first flow of data words having a first data rate, said second flow of data words having a second data rate, said second data rate greater than said first data rate such that said second flow of data words under-runs, transmitting said second flow of data words over a plurality of communication links (demultiplexer separates STM16 signal into STM1 signals, as many as 16, and feeds them to FEC coder; figures 1 & 2 and see column 2 lines 35-37), and data alignment data structure transmitted over each of said communication links for each said under-run (each STM1 signal outputted by FEC coder is encoded with a overhead bit, parity bits, and dummy bits; figures 1 & 3 and see column 2 lines 40-43).

The background information disclosed by Fujisawa is implemented within the same submarine cable system as taught by his invention (see column 1 lines 7-15). The limitation: first flow of data words having a first data rate, said second flow of data words having a second data rate, said second data rate greater than said first data rate

such that said second flow of data words under-runs, is inherently known as referred to by this background information (adding dummy bits increases rate, see column 1 lines 16-18).

Regarding claim 3, Fujisawa discloses the limitation: encoding data within either said first flow of data words or said second flow data words, said encoding for reliable transmission over said plurality of communication links (each STM1 signal encoded at Forward Error Correction (FEC) coder; see column 2 lines 40-41).

Regarding claim 6, Fujisawa discloses the limitation: plurality of communication links corresponds to an LVDS communication link (the STM16 signal is separated into as many as 16 STM1 signals; figure 2 and see column 2 lines 35-36).

Regarding claim 7, Fujisawa discloses the limitation: receiving a stream of data from each of said plurality of communication links (FEC coder output is fed into a converter and then a multiplexer; figure 1, 3, & 5 and see column 2 lines 44-52).

Regarding claim 8, Fujisawa discloses the limitation: obtaining data alignment on each said streams of data by identifying an appearance of a said data alignment data structure within each of said streams of data (the dummy bits are eliminated from the output of the FEC coder; figure 5 and see column 2 lines 50-52).

Regarding claim 14, Fujisawa discloses the limitation: a transmitter that expands a flow of input data words into a second flow of data words having a first data rate (2.5 G optical receiver converts a 2.4G optical signal into STM16 signal; figure 1 and see column 2 lines 33-35), said second flow of data words having a second data rate, said second data rater greater than said first data rate such that said second flow of data

words under-runs, said transmit: a different piece of said second flow of data words (demultiplexer separates STM16 signal into STM1 signals, as many as 16, and feeds them to FEC coder; figures 1 & 2 and see column 2 lines 35-37), and a data alignment data structure for each said under-run (each STM1 signal outputted by FEC coder is encoded with a overhead bit, parity bits, and dummy bits; figures 1 & 3 and see column 2 lines 40-43).

The background information disclosed by Fujisawa is implemented within the same submarine cable system as taught by his invention (see column 1 lines 7-15). The limitation: said second flow of data words having a second data rate, said second data rater greater than said first data rate such that said second flow of data words under-runs, is inherently known as referred to by this background information (adding dummy bits increases rate, see column 1 lines 16-18).

Regarding claim 15, Fujisawa discloses the limitation: an encoder that encodes data within either said first flow of data words or said second flow data words, said encoding for reliable transmission over said plurality of communication links (each STM1 signal encoded at Forward Error Correction (FEC) coder; see column 2 lines 40-41).

Regarding claim 18, Fujisawa discloses the limitation: plurality of communication links corresponds to an LVDS communication link (the STM16 signal is separated into as many as 16 STM1 signals; figure 2 and see column 2 lines 35-36).

Regarding claim 19, Fujisawa discloses the limitation: a receiver that receives a stream of data from each of said plurality of communication links (FEC coder output is

fed into a converter and then into a multiplexer; figure 1, 3, & 5 and see column 2 lines 44-52).

Regarding claim 20, Fujisawa discloses the limitation: said receiver further comprises, for each of said communication links, a data alignment unit that obtains data alignment on each of said streams of data by identifying an appearance of a said data alignment data structure within each of said streams of data (output of the FEC coder is put into a converter where the dummy bits are eliminated; figure 1 & 5 and see column 2 lines 50-52).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 4-5 &16-17 rejected under 35 U.S.C. 103(a) as being unpatentable over by Fujisawa et al. (US 6657967).

Regarding claims 4-5, Fujisawa discloses all the limitations of claim 1.

Fujisawa, however, does not teach the limitations: said encoding further comprises 8B/10B encoding and said data alignment data structure is a K28.5 character.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to implement the 8B/10B method to encode each STM1 signal with a overhead bit, parity bits, and dummy bits using K28.5 characters. The motivation to

do so would have been to expand each of the STM1 signals (from 8 bits to 10 bits) so a symbol (K28.5 character) could be inserted for reliable transmission.

Regarding claims 16-17, Fujisawa discloses the limitations of claim 14.

Fujisawa, however, however does not teach the limitations: said encoder further comprises 8B/10B encoder and said data alignment data structure is a K28.5 character.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to implement the 8B/10B method within the encoder to encode each STM1 signal with a overhead bit, parity bits, and dummy bits using K28.5 characters. The motivation to do so would have been to expand each of the STM1 signals (from 8 bits to 10 bits) so a symbol (K28.5 character) could be inserted for reliable transmission.

Allowable Subject Matter

7. Claims 2, 9-13, & 21-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Claims 26-27 allowed.

The following is an examiner's statement of reasons for allowance:

Regarding claim 26, the prior art fails to teach the limitations: "a word width expansion unit that expands a flow of input of data words into a second flow of data words, said flow of input data words having a first width and a first data rate, said second flow of data words having a second width, said second width greater than said

first width, and a queue that receives said second flow of data words and services said second flow of data words from said queue according to a second data rate, said second data rate greater than said first data rate such that said queue under-runs">

Regarding claim 27, the prior fails to teach the limitations: "receiving a first and second data word according o a first data rate, entering a third data word into a queue, said third data word a combination of said first data word and at least a portion of said second data word, servicing said third data word from said queue according to a second data rate, said second data rate higher than said first data rate such that said queue under runs, and fanning out said third data word into a plurality of pieces".

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a) Almond et al. (US 4979169), Method and Apparatus for Performing Format Conversion Between Bit Streams

b) Sasaki (US 5623512), Rate Converting Device Capable of Determining a Transmission Rate as Desired

c) Asamizuya (US 6009098), Data Transmission Apparatus and Data Transmission Method

d) Jordan (US20030016697), Method and Apparatus for Converting Data Packets Between a Higher Bandwidth Network and a Lower Bandwidth Network Having Multiple Channels

e) Kubota et al. (US 6456782), Data Processing Device and Method For the Same

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Feben M Haile whose telephone number is (571) 272-3072. The examiner can normally be reached on 8:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RICKY NGO
PRIMARY EXAMINER